[0158] Furthermore, after the negotiation phase the LS will continue the service procedure through the Proxy or directly. This process is already described in the above section for SIP enabled devices.

[0159] Above was identified the need for maintaining a cache table in the LPS for contacting the LS to which that user has been subscribed. The basic steps would be Server Discovery, Service Negotiation, and Setting the Policy Mechanism. The latter step is performed after either the LS or the LPS have trusted the Target. In this state the Target will set up the policy that will be executed with any client try to request his location information. It means that the Target can make its information globally available or totally private. In the latter case it will be necessary to establish a secure channel for the transmission of that information between the Client requesting the information and the server. However, if the Target has designated the Information to be totally public any untrusted Client can request his location information.

[0160] Roaming Scenario

[0161] This scenario is similar to the basic scenario with the difference that the user is roaming to a different location. It means that the user is already registered at the home SL server and has assigned a Target record Accessing iD (TAD) for that Target. Hence, the home server has already stored both the user Target information ID (TID) and TAD. There can be more than one TAD for a given TID. The TAD can be time or place dependent and it is only temporally attached to the visited server. Now, the Target moved to a different location is going to update his data. The process is the same but now the SIP message is carrying the SL structure in the Payload including the TAD instead of the TID. This is the default TAD assigned to the target by the home server and it serves as a default record accessing ID. In roaming situations, the visited location server becomes the current location server representing the target. After the authentication and Representation Negotiation the visited server allocates a temporary TAD for the Target and informs its default location server of the target's current temporary TAD. The default location server of the target can then bind the two TADs (the default and the temporary).

[0162] Furthermore, for finding out the actual point of attachment of the Target, the TAD that indicates the assigned address will be used. The TAD will unequivocally point to actual location of the Target.

[0163] Conclusions About Application of Spatial Location Information to SIP

[0164] The inclusion of the SLO data as part of the SIP payload during the registration has been disclosed above. Placing this new element in the SIP transaction improves the location server compared to the prior art. The user that has been registered using the SLO data makes his location available for other services and it also specifies how he can be reached. Consequently, once the Location server obtain the user information based on the SLO data, it can send the messages directly to the right situation where the user is located at that moment. It avoids the redundant information received from the location server when the user is logged in various places. The Caller avoids sending multiple requests trying to contact the user.

[0165] The user location information can be stored in different types of databases to be globally available for other

purposes. Those databases will be accessed using another procedure that will require authorisation and a Denial of Service in case the user in the SLO data defined such. The access to the data can be done depending on the databases used but it is open to the decision of the implementers. This part of the service is also considered in the SLO requirements as the transaction between the SLO server or proxy and the SLO Client. A suitable solution would be to use the SIP also for this purpose, extending the protocol with some specific headers for requesting the user location information.

[0166] Furthermore, this new service leaves open the framework for developing new location based and other future services. The SLO Clients will access the data for providing those location-based services.

[0167] In summary, this disclosure sets up the procedures for registering and requesting the SLO information in global databases using SIP.

[0168] An Implementation of Instant Messaging and Presence Using SIP

[0169] Introduction

[0170] The following embodiment implements Instant Messaging and Presence using SIP protocol for various embodiments including a mobile telecommunications embodiment particularly suited to but not necessarily restricted to next generation services.

[0171] The SIP is defined as the signalling protocol for UMTS networks at the Call State Control Function (CSCF), which is part of the Call Processing Server (CPS) network element. The aim of the following is to provide a complete description of the SIP as the signalling protocol for call control between CSCF within the Messaging and Presence process. The environment is the 3G.IP reference architecture and the 3GPP release 2000 All-IP architecture, which is depicted in **FIG. 7C**.

[0172] The SIP-Signalling Services are implemented in the Call and Mobility Management Signalling (CMS) subsystem in the CPS according to **FIG. 7B**.

[0173] Presence Service

[0174] The 3GPP generation is using SIP for signalling but it has to deal with the existing systems. The new architecture has to support the legacy of other prior services such as SMS and it has to improve it with new features.

[0175] The basis of the Presence Service is first of all to define a common data structure where the user location information is specified. XML is preferred as the framework for that purpose. A good example is presented in the draft "An XML Format for Presence Buddy Lists" by Rosenberg et al at draft-rosenberg-impp-buddylist-00.txt. Within the same context the IETF is working in defining a specific format for spatial location information by J. Loughney and J. Costa-Requena "Basic SloP Architecture Proposal," IETF draft-loughney-spatial-arch-00.txt.

[0176] This part of the disclosure is mainly focused in the second approach that is designed for carrying location information based on coordinates, Cell-Id of the mobile at each moment or the like. That format provides a general support for inserting the user data and additional information to reach him.